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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,552	09/30/2003	Vesselin G. Manev	DP-309341	6521

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EXAMINER

MARTIN, ANGELA J

ART UNIT	PAPER NUMBER
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1745

MAIL DATE	DELIVERY MODE
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07/25/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/675,552

Applicant(s)

MANEV ET AL.

Examiner

Angela J. Martin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 16-31 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the Amendment filed on May 1, 2007. The Applicant has amended claims 1-3. However, the action is made final for the following reasons of record.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li, U.S. Pat. No. 6,881,652 B1, in view of Chiang et al., U.S. Pat. No. 6,787,232 B1.

Rejection of claims 1-15 drawn to a method for preparing a positive electrode material.

Li teaches a method for pretreating a positive electrode material for use in a cell of a lithium, lithium-ion or lithium-ion polymer battery (col. 2, lines 29-34), the method comprising subjecting a lithiated transition metal oxide positive electrode material having one or more water-containing compounds therein to a treatment prior to preparing said cell to convert at least a portion of the hydrolysis product

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compounds to one or more water-free compounds (col. 6, lines 52-58), wherein the treatment includes the following: (a) exposing the positive electrode material at a temperature of 0-650.degree C (col. 6, lines 57-58) to a gas; and (b) heating the positive electrode material to a temperature of at least 250.degree C in the presence of an oxygen-containing gas (col. 6, lines 57-60). The method of claim 1 wherein the one or more water-containing compounds are selected from the group consisting of LiOH, Ni(OH)₂ (col. 6, lines 35-40) and the one or more water-free compounds are selected from the group consisting of LiNiO₂ (col. 8, lines 28-32). The method of claim 1 wherein the one or more hydrolysis product compounds are selected from the group consisting of a lithium hydroxide, a transition metal hydroxide (col. 6, lines 35-38). The method of claim 6 wherein the oxygen-containing gas of treatment (b) is air. The method of claim 1 wherein the oxygen-containing gas of treatment (b) is air (col. 6, lines 57-60). The method of claim 1 wherein the positive electrode material is subjected to treatment (a) at a temperature of 100-400.degree C (col. 6, lines 57-58). The method of claim 1 wherein the positive electrode material is subjected to treatment (b) at a temperature of 250-650.degree C (col. 6, lines 57-60). The method of claim 1 wherein the positive electrode material is subjected first to treatment (a), then to treatment (b) (col. 6, lines 50-60). The method of claim 1 wherein the positive electrode material is subjected to treatment (b) immediately prior to preparing said cell (col. 7, lines 5-26).

Li does not teach the recited ranges of the partial pressures of carbon dioxide and oxygen.

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Chiang et al., teach heating precursor powders in various partial pressures of oxygen or CO/CO₂ mixtures (col. 6, lines 44-49). It teaches an oxygen partial pressure of 0.01-0.0000001 atm (col. 6, lines 44-49). The method of claim 1 wherein the CO.sub.2-containing gas of treatment (a) is air (col. 6, lines 44-50). The method of claim 1 wherein the oxygen-containing gas of treatment (b) has a partial pressure of O.sub.2 in the range of 0.1-1.0 atm (col. 6, lines 44-49).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Chiang et al., into the teachings of Li because Chiang et al., teach heating a precursor positive active material in various partial pressures of carbon dioxide and in various partial pressures of oxygen. While Li teaches exposing the material to oxygen, Chiang et al., teach exposing the material to carbon dioxide or oxygen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a preferred partial pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

3. Claims 1, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiwara et al., U.S. Pat. No. 6,242,134 B1, in view of Chiang et al., U.S. Pat. No. 6,787,232 B1.

Fujiwara et al., teach the method of claim 1 wherein the positive electrode material is subjected simultaneously to treatments (a) and (b) at a temperature in the

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range of 250-650 degree C (col. 12, lines 6-22). The method of claim 12 wherein the temperature is in the range of 300-500 degree C (col. 12, lines 12-17).

Fujiwara et al., do not teach the CO.sub.2-containing gas has a partial pressure of CO.sub.2 in the range of 0.0002-0.2 atm, and the oxygen-containing gas is air with a partial pressure of O.sub.2 in the range of 0.1-1.0 atm.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Chiang et al., into the teachings of Fujiwara et al., because Chiang et al., teach heating a precursor positive active material in various partial pressures of carbon dioxide and in various partial pressures of oxygen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a preferred partial pressure, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Response to Arguments

4. Applicant's arguments filed 5/1/07 have been fully considered but they are not persuasive. Applicant argues that, "the Applicant's method is directed to pretreating a positive electrode material." However, "pretreating" of the amended claim is a synonym for "preparing" in the original claim. Applicant argues that the Li reference "does not teach the use of carbon dioxide, and the temperature ranges as set forth in the Applicant's method." However, Li teaches employing oxygen while the secondary reference, Chiang et al., teach employing oxygen or carbon dioxide, thus showing that

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the artisan can employ either oxygen or carbon dioxide for the gas stream. Additionally, Chiang et al., is employed as a secondary reference to encompass the temperature range disclosed in the application.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AJM


PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER